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EXPLORATIONS IN THE MEASUREMENT OF JUNIOR COLLEGE ENVIRONMENTS.

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DEVELOPED FOR USE IN 4-YEAR ACCREDITED INSTITUTIONS, COLLEGE AND UNIVERSITY ENVIRONMENT SCALES (CUES) WERE CONSTRUCTED FROM THOSE ITEMS WHICH DISCRIMINATED MOST CLEARLY THE ENVIRONMENTAL DIFFERENCES AMONG 50 SUCH INSTITUTIONS. A PRELIMINARY INVESTIGATION OF THE USE OF CUES IN 32 JUNIOR COLLEGES IN CALIFORNIA, TEXAS, AND MINNESOTA SHOWED THAT (1) THE ITEM CONTENT WAS APPROPRIATE FOR JUNIOR COLLEGES, (2) DIFFERENCES BETWEEN JUNIOR AND 4-YEAR COLLEGE SCORES WERE ABOUT AS EXPECTED, (3) SCORES DID NOT VARY AMONG JUNIOR COLLEGES AS MUCH AS AMONG THE SENIOR INSTITUTIONS, AND (4) THIS LACK OF DISCRIMINATION MAY HAVE BEEN A FAULT OF THE TEST OR AN ACCURATE REFLECTION OF THE JUNIOR COLLEGE ENVIRONMENT. IN A PILOT ADMINISTRATION OF A 300-ITEM EXPERIMENTAL SCALE, NONE OF THE FIVE EXISTING CUES SCALES EMERGED AS A CLEAR FACTOR, ALTHOUGH TWO FACTORS (REPRESENTING COMBINATIONS OF THE ORIGINALS) DID SEEM EVIDENT. AT THE TIME OF THE REPORT, A NEW FORM OF THE SCALES FOR USE IN JUNIOR COLLEGES WAS BEING DEVELOPED, WITH A HOPE OF IDENTIFYING THE EXTENT TO WHICH SOME JUNIOR COLLEGE ENVIRONMENTS MAY BE MORE EFFECTIVE THAN OTHERS IN PREPARING STUDENTS FOR 4-YEAR COLLEGES. THIS DOCUMENT IS REPORT NUMBER 3 OF A SERIES PREPARED FOR THE COLLEGE ENTRANCE EXAMINATION BOARD. (WO)

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Explorations in the Measurement of Junior College Environments

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Introduction

College & University Environment Scales were developed for use in four-year accredited institutions. Its items were ones which discriminated most clearly the environmental differences in a nationally selected group of 50 such institutions. And the scales themselves reflected the major dimensions or ways in which such institutions differed. Of the 2100 or so institutions listed in the US Office of Education's directory of higher education, about 1200 fall in this category. But there are also some 700 or more junior colleges accounting for at least one-fifth of all enrollments in higher education. In California more high school graduates begin their college education in junior colleges than in four-year colleges or universities. On many of the campuses of the University of California, the junior and senior classes are larger than the freshman and sophomore classes, owing to the admission of transfer students from the junior colleges. Mobility within the total system of higher education is a significant phenomenon. At the same time, junior colleges serve large numbers of students who do not continue their education beyond the two-year period; and to this extent the programs of general, vocational, and remedial education represent a unique role and contribution within the total pattern of education beyond the high school. Thus the junior colleges have unique responsibilities as well as responsibilities which parallel those of four-year colleges and universities. Thus too, an instrument for characterizing junior college environments should, ideally, enable one to relate junior colleges to four-year colleges and universities and should also identify whatever unique dimensions there might be that differentiate among junior colleges themselves. The present report describes the background and the design for such an instrument.

The Uses of CUES in Junior Colleges

In the academic year of 1963-64, B. Lamar Johnson, Vernon Hendrix, and C. Robert Pace jointly conducted a graduate seminar at UCLA in which the primary topic of discussion was the measurement of junior college environments. Twelve of the junior college administrators enrolled in the seminar administered CUES to samples of students at their colleges, and in some cases to other groups as well. The junior college administrators were interested in seeing how their students perceived the college environment; and we were interested in seeing whether CUES were reasonably appropriate to use in junior colleges.

Dr. Hendrix had previously used the College Characteristics Index (CCI) in several Texas junior colleges; and through the cooperation of Dean Robert Keller at the University of Minnesota we also got CCI reports of data previously collected from Minnesota junior colleges. By rescoring the CCI and converting to CUES scores we had data from 32 junior colleges--12 California, 12 Minnesota, and 8 Texas.

From all the above data, and special studies, we were able to get tentative answers to several questions.

First, does CUES contain an appreciable number of items that are inappropriate in content for junior colleges? The answer to this question is "no." Several of us in the seminar, as well as a number of junior college faculty members, looked at the items with this question in mind and we came to the following consensus. There were nine items dealing with such matters as faculty research, graduate school aspirations of students, the role of upperclassmen, the importance of graduation exercises, and of college history and traditions which we felt were probably not applicable to junior colleges generally. There was one item dealing with religious services which would not be applicable to public junior colleges. And there were five items dealing with student housing which would not be appropriate for public junior colleges. Moreover, these 15 items came from different scales in CUES so that the score on any particular scale could not be influenced by more than one to four points.

Second, we looked at item statistics to see whether certain items were non-functional for junior colleges, either because of difficulty level or potential for discrimination. We noted first whether there were certain items that tended to be true at nearly all junior colleges, or tended to be true at hardly any junior colleges--that is, items marked true by 85 per cent or more, or 15 per cent or fewer, of the students from the 32 colleges. There were only ten such items. We then noted the variability of responses across the different schools. Here it was obvious that the spread of differences between one college and another was often too small to be very useful for discrimination between junior college environments. In the initial selection of items for CUES only one item had been included that had a standard deviation as small as nine points in the sample of 50 four-year colleges and universities. Across the population of 32 junior colleges, however, there were 29 items that had a sigma smaller than nine points. In the CUES norm group of 50 colleges and universities there were nine items with sigmas smaller than 12, but in the group of 32 junior colleges there were 75 items with sigmas smaller than 12. Basically then, many of the items which discriminated very well between the environments of four-year colleges and universities did not discriminate at all well between the environments of the 32 junior colleges.

Third, we compared the CUES scores of junior colleges with the scores of liberal arts colleges and universities. If we think of liberal arts colleges as one type of institution, of large complex universities as another type, and of junior colleges as a third type, do we in fact find that schools within each type tend to be similar? The answer is "yes" for junior colleges, and "no" for liberal arts colleges and universities. The range of differences between the scores of our 32 junior colleges (that is, the difference between the highest scoring school and the lowest scoring school) spread over only half of the possible range of scores on the test. On three of the scales, the scores of junior colleges covered the middle segment of the distribution, from moderately low to moderately high. On the other two scales (Scholarship and Awareness) their scores fell almost entirely within the lower half of the possible range. The scores of 27 universities, available for analysis at the time,

spread over seven-tenths of the possible range on the test. On four of the scales their scores ranged from zero or close to zero to quite high. On the Propriety scale their scores ranged from close to zero to just beyond the middle of the possible range. The 40 liberal arts colleges studied were the most diverse group of institutions, their scores spreading over nine-tenths of the possible range, and going on every scale from zero or close to zero up to very high scores.

The conclusions from these preliminary studies can be summarized briefly: (1) the item content of CUES is appropriate for junior colleges, (2) the scores obtained by junior colleges are about what one would expect in comparison with liberal arts colleges and universities, (3) the differences between junior colleges, however, are not nearly as large as the differences between universities or between liberal arts colleges, (4) this relatively greater homogeneity may be a valid judgment about junior colleges in general, or it may be peculiar to the Minnesota, Texas, and California schools that were studied, (5) in any event, while many of the present CUES items do not discriminate well between different junior colleges, one cannot say whether this is a fault of the test items or an accurate reflection of junior college environment.

The students and staff in the UCLA seminar generally felt, from the experience of giving CUES in junior colleges, that the results were both interesting and meaningful to the local users. There was no general feeling that the five scales--Scholarship, Awareness, Community, Propriety, and Practicality--were either irrelevant or unimportant. There was a feeling, however, that there might be one or more additional scales which ought to be devised and tried out. For example, none of the CUES scales really taps the vocational, technical, job-oriented emphasis which is presumably an important aspect of many junior college programs. There might also be a need for some items which reflect the remedial and counseling aspects of junior college programs.

The Development of New Items

During the summer of 1965 the writer developed an experimental 300 item version of CUES intended for use in large complex universities. It had two special features, both of which had initially been built into the College Characteristics Analysis (CCA), constructed in 1960. One was the developmemt and use of a specific outline for determining item content, so that the test as a whole would have a balanced representation of different aspects of the environment; the other was the provision for responding to certain sets of items with reference to specified academic fields and student peer groups rather than with reference to the institution in general, thus enabling the environmental press of different academic and student subcultures to be measured directly. The CCA has been described elsewhere, along with results obtained from its use (Pace, The Influence of Academic and Student Subcultures in College and University Environments, USOE Coop Res Project 1083, UCLA, 1965). A more complete description of the 300 item version of CUES is the subject of another report in the current series of reports to the CEEB. Briefly, in developing the 300 item test the following steps were taken: 1) we classified all the 150 CUES items into the content categories established for the test, 2) we then selected and classified certain items from the CCA for inclusion in the new test, and 3) we wrote new items to fill out the desired test blueprint for item content. Cooperating with the writer in classifying items and writing new ones were Vernon Hendrix, Leonard Baird, Bernita Wolf, Gary Dean, and Geraldine Ferguson.

Although the expanded 300 item test was initially intended for use in universities, all of us who wrote items were thinking about all types of higher institutions. In some cases we wrote items which we thought might be particularly relevant for junior colleges but at the same time not inappropriate for some universities. Our hope was to have a range of item content sufficiently broad to permit a reappraisal of the existing CUES dimensions and the possible emergence of other dimensions.

With minor change in the wording of three or four items, and with elimination of the special instructions for subgroups in large universities, the 300 items were assembled in a special test form and used by Dr. Hendrix in a nation-wide study of public junior college environments.

Major Dimensions of Junior College Environments

Useable data have been obtained from 86 public junior colleges and are being analyzed by Dr. Hendrix. Preliminary factor analyses of the items (the test was divided into equivalent thirds for this purpose) have been examined. None of the existing five scales in CUES has emerged as a clear factor in these junior college data. Instead, it looks as if there are two rather large factors, both of which overlap with several of the dimensions in CUES.

The first of these factors is loaded most heavily with some of the CUES items from both the Scholarship and Awareness scales, plus new items that were classified under those headings. From inspecting the item content, we tentatively see these items as suggesting an expansion of personal and societal interests. The items suggestive of deep commitment to social reform, intense interest in arts, or abstract intellectual pursuits for their own sake do not discriminate between junior college environments. What does discriminate, and what seems to characterize the relevant factor for junior colleges, are items which are less difficult, less stringent, less abstract, but which nonetheless suggest an "opening up" of new horizons and new interests and new societal concerns for the student--a general broadening of awareness and scholarship.

The second large factor is composed of items from all the other scales in CUES plus similar new items. Neither Community, nor Propriety, nor Practicality emerges as a distinguishable dimension. But selected items of all these kinds seem to come together in a new pattern which does differentiate between junior college environments. Again, from inspecting the content of items which best define this factor, we see these as forming a scale of restrictiveness vs responsibility. Apparently some junior colleges in their general mode of supervision and orderliness and the general regimen of activities, policies, and practices in dealing with students are rather like many high schools; whereas in other junior colleges the practices reflect a greater degree of freedom and responsibility on the part of students, a responsibility encouraged by the college. Although we have not yet attempted to label these factors or

to select the exact items which will be used to form new scales, we might tentatively think of them as "expansion" and "responsibility."

From the analyses thus far there does not seem to be a dimension, at least not a very visible one, concered with the vocational, technical, job-oriented aspect of many junior college programs which differentiates significantly between junior college environments. Such a scale may subsequently be developed after further analysis of the data.

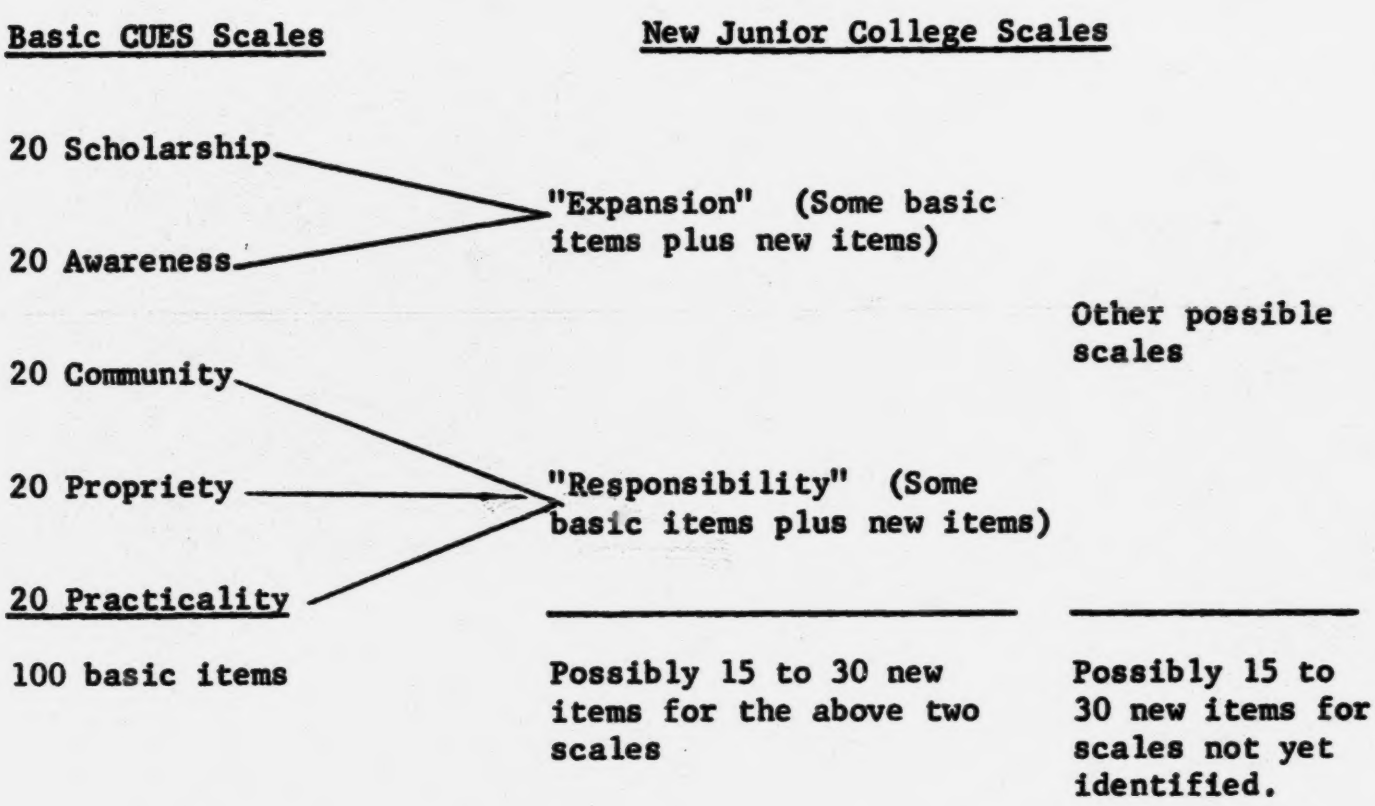
Design for a Junior College Edition of CUES

At the beginning of this report we said that a junior college version of CUES should be composed of scales which differentiate most usefully among junior college environments and at the same time should enable junior colleges to relate themselves to other types of higher institutions. Our proposed Junior College edition will serve both these purposes.

As a result of a general reanalysis of CUES data from a national cross-section of 100 four-year institutions, an anlysis which has been supported by a grant from the US Office of Education, it is planned to issue a revised version of the basic instrument, together with a slightly modified scoring system and new national norms. This revised version will consist of the best 20 items from each of the five current scales--Practicality, Community, Awareness, Propriety, and Scholarship--making a new basic test of 100 items on which national normative data are available. Then, to maintain the test at its present length of 150 items, ten new items will be added to each scale for experimental try-out, thus building into the revised version the potential for periodic renewal as data accumlate on the experimental items.

The Junior College edition will consist, first, of the same basic 100 items that will be used in the revised regular edition of CUES This will permit junior colleges to obtain scores on the same scales that are applied to four-year colleges, thus seeing their environments in relation to other types of colleges and universities. Then, some of these 100 items will be rescored, together with new items, to provide special junior college measures of the dimensions previously described, and perhaps of one or more additional dimensions not yet identified. The total Junior College test will probably be somewhere between 130 and 160 items--organized approximately as follows:

Junior College Edition of CUES


Basic CUES Scales
New Junior College Scales
20 Scholarship
20 Awareness
"Expansion" (Some basic items plus new items)
Other possible scales
20 Community
20 Propriety
20 Practicality
"Responsibility" (Some basic items plus new items)
100 basic items
Possibly 15 to 30 new items for the above two scales
Possibly 15 to 30 new items for scales not yet identified.

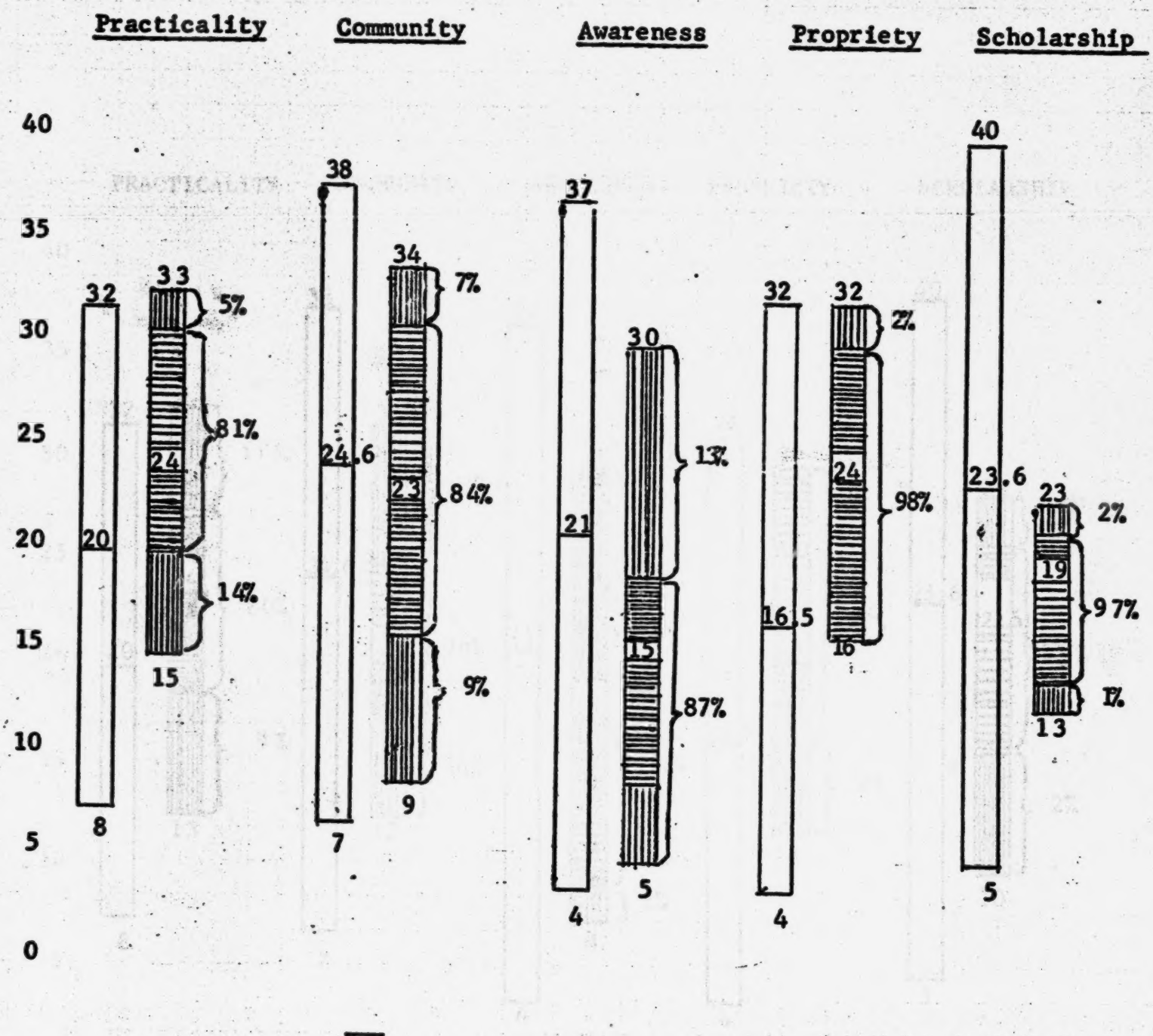
Junior College Environments in National Perspective

The 100 items from the current edition of CUES which will be retained in the new edition of CUES and also be included in the proposed junior college edition of CUES have been scored. These scores are computed somewhat differently from the present test. Instead of counting in the score for each scale only those items answered by a consensus of two to one or greater in the keyed direction, we count all items which attain this level of consensus in a direction opposite to the key as well as in the keyed direction. Thus, all items about which students agree are used in the scoring. We call this the 66/33 scoring system. The "66 plus" items in the keyed direction are counted and then the "33 minus" items (items answered by a 2 tc 1 consensus in the opposite direction) are subtracted. Then, to eliminate negative numbers in the score, 20 points are added. The possible range of scores, on each scale, is from zero to 40. For example, if 10 of the 20 items are answered by 66% plus in the keyed direction, and 5 of the 20 items are answered by 33% minus (i.e. opposite to the keyed direction), then the score is 10 - 5 = 5 (plus a constant of 20) = 25. If 5 items are answered in the keyed direction and 10 are answered in the opposite direction, then the score is 5 - 10 = -5 (plus a constant of 20) = 15.

Results, based on these scores, are shown in the following graph. The graph reports the complete range of scores, from the highest score in any school to the lowest score in any school, on each of the five scales.

The bracketed segments of the junior college graphs indicated by the horizontal lines show where the scores of most of the junior colleges are concentrated. It is clear, for example, that most of the junior colleges (roughly 9 or more out of 10) score above the average of four-year colleges on Practicality and Propriety, and below the average of four-year colleges on Scholarship and Awareness. On the Community scale, the scores of Junior Colleges cluster generally around the middle portions of the distribution of four-year colleges. In short, the typical Junior College profile on CUES (using four-year colleges as the reference group)

Total Range of CUES Scores in Junior Colleges and Four-Year Institutions



100 Four-year colleges and universities

86 Junior colleges

} Percentage of junior colleges falling within the bracketed portion of the total junior college distribution.

is one of high scores on Practicality and Propriety, low scores on Scholarship and Awareness, and about average scores on Community.

The above results differ somewhat from the earlier study of 32 California, Texas, and Minnesota junior colleges. First, the total range of junior college scores on some scales is larger than previously reported, extending generally over three-fourths the range of scores for four-year colleges on Practicality, Community, and Awareness; but with a narrow range (30 per cent) on the Scholarship scale. Second, the typical junior college profile shows generally higher scores on Propriety and Practicality than previously reported.

Future Research and Application

The continued expansion of junior colleges across the country, together with the evidence we have presented indicating that the differences between most junior college environments on CUES are relatively small, are persuasive conditions for developing a junior college edition of CUES. By identifying more clearly the dimensions along which junior colleges do differ substantially we are more likely to learn the extent to which some junior college environments may be more effective than others as staging grounds for advancement to four-year colleges.

The tentatively named dimensions of "expansion" and "responsibility" along which junior colleges do appear to differ are ones which suggest degrees of maturity beyond high school. And these dimensions would seem to be most relevant not only for the future transfer to four-year colleges but also for the general education of students who may not continue beyond the two years. Meanwhile, it could be a spur to the improvement of a good many weak four-year institutions to face the fact that all junior colleges are superior to some four-year colleges in their environmental press toward scholarship. Students who, for economic or other reasons, begin their higher education in junior colleges should know that the level of work and stimulation they will encounter, with respect to scholarship, is about the same as they would find in many four-year colleges and universities. Moreover, despite the fact that our junior college data came from public institutions where, in nearly all cases, the students are commuters rather than full-time residents, there is a sense of community in the junior college environment that, while not nearly as strong as it is in most residential liberal arts colleges, is never as lacking as it is in some four-year institutions, particularly large urban universities and State colleges.

It is expected that CUES, Junior College Edition, will be published and distributed by Educational Testing Service. A manual, describing its development, scales, scoring, norms, and interpretation is being prepared by Dr. Hendrix.